Life Insurers' Private Credit Investments and Annuity Market Share Capture

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Abstract

We show that life insurers have increased their lending in the private placement market over the past decade, totaling $849 billion, or 14%, on life insurers' balance sheets in 2024. A substantial part of the growth stems from private credit extension to financial borrowers and to privately placed asset-backed securities. We document that private equity-owned (PE-owned) life insurers drive these trends. We also provide evidence that these investments have about 80 basis points higher spreads compared to public bonds and foster PE-owned insurers' growth in the annuities market. A one standard deviation increase in financial private placement investments is associated with 0.05 percentage points higher market share in the annuities market.

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Keywords: Private Credit, Private Placements, Annuities, Private Equity.

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1 Introduction

Private credit has expanded rapidly over the past decade, reaching over $2 trillion in 2024 (IMF 2024). Life insurers are one of the largest providers of private credit through private placements.[1] While life insurers have long provided this form of credit, Figure 1 shows that private placements lending increased from $386 billion in 2014 to $849 billion in 2024. Private placements accounted for 14 percent of life insurers' general account assets in 2024, up from 10 percent in 2014. Despite being an important source of private credit, private placements and their recent growth have not been studied.

The brisk growth in private placements coincides with the entry of private equity (PE) into the life insurance sector. Persistently low interest rates after the 2008 financial crisis, combined with high guarantees in legacy annuity contracts placed pressure on insurers' profitability. Legacy insurers were looking to offload capital-intensive blocks of annuity business and turned to reinsurance agreements primarily with PE firms. Concurrently, PE firms bought life insurers valuing their long-duration and illiquid liabilities as a form of permanent capital to fund their investments. The takeovers led to significant changes in the traditional insurer business model (Kirti and Sarin 2023; Cortes, Diaby, and Windsor 2023).

This paper investigates the underlying drivers and consequences of life insurers' increased participation in private credit markets. Specifically, we analyze whether this investment strategy solely increases the return on assets or also allows insurers heavily invested in *new* forms of private placements to capture a larger share of the annuity market. To date, the literature has focused on regulatory arbitrage mostly within public bond investments in the life insurance sector, but has neglected private placements and contemporaneous changes in the product market.

To analyze the growth in private placements and its drivers, we begin by identifying private placements on life insurer balance sheets based on CUSIPs and classify the borrower industry by matching the private placement data to the Business Entity and Cross References Services (BECRS) database, Mergent Fixed Income Securities Database

[1] Private placements are unregistered securities that are sold to a limited pool of investors, primarily life insurers. The investments are distinct from bonds issued under SEC rule 144A, which require a minimum of publicly available information.

(FISD), and National Establishment Time-Seires (NETS) data.[2] We document that the new segments, financial borrowers and privately placed asset-backed securities (ABS), account for a large share of the growth. Notably, life insurers started lending to financial firms and funds that themselves extend private credit to middle market firms. Traditional segments, such as project finance, increased as well, but to a lesser extent. This new trend in private placements lending increases the interconnectedness of life insurers with the broader financial system, with which life insurers historically had little overlap.

Next, using cross-sectional regressions, we show that for PE-owned insurers, the private placement share of assets expanded by 7 percentage points more than non-PE-owned insurers between 2017 and 2024. About third of this differential growth is driven by investments in financial and ABS private placements. At the same time, there is little evidence that insurers that were PE-owned expanded their holdings of public ABS such as collateralized loan obligations (CLOs). We confirm this result in dynamic estimations and show that PE did not strategically acquire insurers that already had invested differentially more in private placements before acquisition.

We then document that private placements earn a yield that is up to 80 basis points higher than the yield on comparable public corporate bonds.[3] For ABS private placements, the spread difference is 156 basis points compared to 82 basis points for public ABS. We provide evidence that at least part of this higher yield reflects lower liquidity of private placements. We expand the analysis of Fournier, Meisenzahl, and Polacek (2024b) and show that private placements are, on average, only half as likely to be traded as public bonds in a given quarter. Similarly, the sales rate of ABS private placements is only half of the CLO sales rate. Moreover, while public bonds are typically traded using a large broker, we document that private placements are sold over the counter and in some cases to small brokers with limited balance sheet capacity. This finding is consistent with life insurers receiving an illiquidity premium on their investments (Carlino et al. 2024).[4]

[2]The BECRS data and related cross reference identifiers are accessed via the S&P Capital IQ Pro database compiled by S&P Global. We access Mergent FISD data through Wharton Research Data Services (WRDS) who compiled the raw data. NETS is compiled and provied by Duns and Bradstreet (D&B). All results based on author's calculations.

[3]This significant difference is in line with Böni, De Roon, and Joos (2020) who find a spread difference of 116 basis points in a sample of 310 European issuers of private and public bonds between 2002 and 2015.

[4]Life insurers can experience runs, especially when they finance themselves with short-term liabilities (Foley-Fisher, Narajabad, and Verani 2020). Hence, increases in illiquid assets exposes insurers to more

Finally, we link the growth in private placement investment to increases in the annuity market share. We show that increases in the market share measured as either premium share or annuity reserve share are associated with growth in financial and ABS private placement investments. In the cross-section, we find that while the average insurer lost 0.02 percent of premium market share, an insurer that invested one standard deviation more in financial and ABS private placements increased their premium market share by 0.05 percent. These increases in market share are concentrated in indexed annuities.

We contribute to the literature on private credit.[5] Much of the private credit literature has focused on Business Development Companies (BDCs), likely due to data availability (see, for instance, Davydiuk, Marchuk, and Rosen (2023; 2024); Chernenko, Ialenti, and Scharfstein (2025); Avalos, Doerr, and Pinter (2025)). For context, BDC investments in private credit reached $407 billion in 2024Q3[6], which is about half of private credit provided by insurance companies through private placements. To the best of our knowledge, we are the first to comprehensively analyze private credit provided by life insurers through private placements and their implications.

We also add to the growing literature documenting changes in the life insurance industry. Kirti and Sarin (2023) focus on regulatory and tax arbitrage, showing that PE-owned life insurers shifted their public bond investment portfolios towards public, private-label ABS such as CLOs and potential return-financial stability tradeoffs before 2014.[7] In contrast, we focus on the growth in private credit after 2017 and show that sharp increases in private credit provision to financial borrowers and privately placed ABS allowed PE-owned insurers to capture a larger share of the annuity market. Moreover, since the trends we document start when their sample period ends, we provide new evidence on shifts in the insurance market. Ozdagli and Ryfe (2025) show the life insurers' portfolios are more similar when they have common asset managers. Foley-Fisher, Heinrich, and Verani (2023) link CLO investments to liquidity transformation undertaken by life insurers in addition to regulatory arbitrage. We provide evidence on the size of a potential liquidity

fire sale risk.

[5] A related literature studies the migration of credit from banks to private markets, see, for instance, Irani et al. (2020); Gopal and Schnabl (2022).

[6] Since 2020, a large share of the growth is driven by new perpetual-life BDCs https://www.lsta.org/news-resources/bdc-quarterly-wrap-3q24/.

[7] Becker, Opp, and Saidi (2022) provide additional evidence on the importance of capital requirements and regulatory arbitrage in the insurance sector.

premium of private placements. Carlino et al. (2024) detail life insurers' involvement in the CLO and BDC markets and the regulatory arbitrage in these markets, which are distinct from the private credit we study. Koijen and Yogo (2016) document increased use of reinsurance in the life insurance industry to reduce capital requirements, and Becker and Ivashina (2015) reach-for-yield within NAIC bond ratings categories.[8]

Our findings complement recent research on the effects of PE takeovers.[9] Using supermarket scanner data, Fracassi, Previtero, and Sheen (2022) show that after PE takeovers, target firms grow by introducing new consumer products and expanding their geographic reach. We show that PE-owned insurers increase their annuity market share by focusing on newer products, indexed annuities, matched by more private placement investments. Other research has focused on the effects on performance, on the real side Davis et al. (2025, forthcoming) find productivity effects of PE takeovers, while on the financial side Johnston-Ross, Ma, and Puri (2025) show that distressed banks taken over by PE perform better ex post with positive spillovers to the local economy, and Kirti and Sarin (2023) document changes in life insurers' public bond holdings up to 2014.[10] We show that PE life insurers drove the increase and changes in the sectoral composition in private credit provision from 2017 on and that the compositional change led to greater interconnectedness with the broader financial system.

The remainder of the paper is organized as follows. Section 2 provides the background for private placements and indexed annuities. The data, including the identification and classification of private placements, are summarized in section 3. In section 4 we present our main analysis. Section 5 concludes.

2 Life Insurer Investments and Products

In this section, we provide background on the private placement market . We then provide an overview of the annuities market that accounts for over 60 percent of life insurers' premiums and zoom in on indexed annuities that experienced the largest growth

[8] For a broader overview of life insurance investments and financial decisions, see Koijen and Yogo (2023).

[9] Bernstein (2022) provides a summary of the earlier literature.

[10] A significant literature looks the effects in the health care sector, see Gao, Kim, and Sevilir (2025) and references therein.

in market share.

2.1 The Private Placement Market

Private placements are one type of unregistered security. A security is a private placement if it is not required to be registered with the SEC, if it is not publicly offered, and if it is sold only to a limited number of accredited investors. As such, private placements allow companies to raise capital without needing to meet the legal and disclosure requirements for issuing equivalent public securities.[11] Almost all private placements are debt securities, especially those held by life insurers.

In contrast to private placements, publicly traded securities must be registered with the Securities Exchange Commission (SEC) and require significant disclosures following the Securities Act of 1933, often referred to as the "truth in securities" law, as well as subsequent legislation.[12] However, these disclosures also create a substantial regulatory burden for issuing companies. To reduce the cost of issuing securities, not all security offerings, such as private placements, are required to be registered with the SEC.

Despite what the name might suggest, both publicly traded and privately held companies issue private placement debt. Historically, private placements were typically issued by mid-cap companies ($2 to $10 billion in market capitalization), but more recently large-cap companies ($10 billion or more in market capitalization) have increased participation in the market, which has increased the size and diversity of the market. Private placements are also issued by both domestic and foreign companies. Approximately 70% of private placements held by life insurers are issued domestically, and the remaining 30% are cross-border with almost all the issuance coming from the United Kingdom, Australia, and Europe.

To the best of our knowledge, life insurers are the dominant players in the private placement market. We also find evidence that life insurers own a majority of outstanding

[11] A security is a tradable financial instrument typically issued in the form of an equity security, like a stock, or a debt security, like a bond.

[12] These disclosures are regulated by the SEC and include the requirement for bond issuers to produce a prospectus detailing the terms of the bond issuance, any significant risks from the offering, the financial condition of the issuing company, and how the proceeds of the bond issue will be used. Additionally, companies that issue publicly traded securities must file quarterly reports detailing their financial balance sheets and describing any material risks to the company. These disclosures are meant to protect investors by fully informing them of any information relevant to their investment and to prohibit deceit and fraud in the sale of securities.

private placement issuance. Using a 2017-2024 matched sample of transactions from the S&P transaction database we identify 621 private placement bonds, totaling $25 billion in outstanding issuance. Life insurers own 65 percent of the total outstanding issuance with median ownership of 76 percent. Figure A1 provides a distribution of the par value-weighted proportion of issues held by life insurance companies from 2017-2024 Each bar is stacked to indicate the share attributable to different transaction size groups.

2.2 Annuities Market

Contrary to their name, life insurers' main products are annuity contracts. Beginning in the early 80's and accelerating in the 90's, the life insurer business model shifted from providing income protection against early death through life insurance products to offering retirement funding and longevity risk protection through annuities (Obersteadt et al. 2013). While in 1980 half of reserves and premiums were from life insurance, they accounted for less than 30 percent in 2024. In contrast, annuities comprised almost two thirds of the industry's liability reserves in 2024 (ACLI 2024). Figure 2 shows the increase in annuities by annuity type that we discuss below.

Annuities allow policyholders to accumulate savings on a tax-deferred basis or to transform an immediate lump sum payment into a guaranteed stream of income. Deferred annuities have two phases: the accumulation phase and payout phased. In the accumulation phase, policyholders pay premiums and accumulate savings on a tax-deferred basis. Policyholders have limited access to their funds during this phase. During the payout phase, the policyholders receive payments according to the contract's schedule and can typically withdraw the accumulated cash value with little or no penalty. Insurers compete to attract policyholders by offering the strongest guaranteed returns and product features that best meet the savings needs of consumers. Historically, deferred annuities have come in two forms: fixed and variable.

Fixed annuities offer policyholders a guaranteed fixed rate of return that typically follows the 10-year Treasury rate. The insurer bears the investment risk on this product and earns a profit by generating a spread on the invested assets above the payouts made to the annuity holder.

Variable annuities are an investment account where policyholders choose invest-

ment allocation and bear the investment risk. The policyholder return is linked to the investment return of the assets and the insurer earns fees for managing the investments. Variable annuities typically offer additional guarantees known as "riders", under which the insurer bears the associated investment risk. These riders include minimum guaranteed benefit riders, which act as a minimum return on the policyholders' investments, and living benefit riders that guarantee a minimum payout, so long as the annuitant is alive.

Fixed indexed annuities (FIAs) Following the 2008 Financial Crisis, a third type of deferred annuity gained popularity, the fixed indexed annuity, which grew from about $150bn in reserves to $500bn in 2024 (see Figure 2). FIAs combine the guaranteed returns of fixed annuities with exposure to market upside found in variable annuities. In general, FIAs offer returns that are linked to an index, such as the S&P 500, but the policyholder does not have full exposure to the index. Returns are capped through either participation rates, which limit the percent of total return the policyholder receives; interest rate caps, which impose a ceiling on the annual return; or margin fees. Downside risk is limited through buffers, which limit first dollar losses for the policyholder; and floors, which set the maximum percentage loss the policyholder absorbs (FINRA 2022).[13]

3 Data

3.1 Data Sources

Our analysis draws on detailed regulatory data of U.S. life insurers' bond holdings from 2004 to 2024. The Schedule D Part 1 of the from the National Association of Insurance Commissioners (NAIC) statutory filings provides asset-level information on all long-term debt securities held by life insurers, which we access via S&P Global Market Intelligence. These filings allow us to identify private placement bonds and their issuers.

[13]In the low-rate period, insurers were burdened by the high guarantees on fixed rate policies, and variable annuities riders offered in the pre-crisis period. Fixed index annuities emerged as a way for insurers to offer policyholders the ability to access market returns with some downside protection, while limiting their own investment risk. The growth in fixed indexed annuities is tied to the development of hybrid indices that contain several different asset classes and utilize volatility control strategies to limit losses. These products come with a strong marketing pitch, offering attractive upside returns, often without caps or with participation rates above 100%, and little to no downside risk (Moore and Pechter 2022).

We identify private placements and separate them into subsets based on a special character in the sixth, seventh, or eighth position of the security's CUSIP (Committee on Uniform Security Identification Procedures), the unique identification number assigned to each financial instrument traded on U.S. markets. Private notes issued by private companies have a special character in the sixth position of the issuer CUSIP. Public and foreign issuers have a special character in the seventh or eighth position; CUSIPs of foreign issuers also begin with a letter that denotes the country of origin. We complement the NAIC data with three additional sources: S&P Capital IQ's company database and Dun & Bradstreet National Establishment Time Series (NETS) database for information on private firms (e.g., firm name, industry, and corporate parent details), and Mergent's Fixed Income Securities Database (FISD) accessed via WRDS for information on public issuers of private placement bonds.

Using the definition above, we find that from 2004 through 2024, life insurers held approximately 52,778 distinct private placement bond issues, issued by 19,385 unique issuers. We further categorize these issuers into three groups based on their identity: about 70% are U.S. private companies (domestically domiciled firms that are not publicly traded), roughly 13% are U.S. public companies (domestic issuers that are publicly traded or SEC-reporting), and the remaining 17% are foreign issuers. When weighting by value about 48% are U.S. private companies, roughly 21% are U.S. public companies, and the remaining 31% are foreign issuers.

We classify private placement bonds and asset-backed securities (ABS) using issuer and issue-level detail reported in NAIC Schedule D filings. Corporate securities are identified using the issuer type variable, which indicates whether the issuer is a corporate entity, municipality, U.S. government, or foreign sovereign. Because insurer-reported issuer types are occasionally inconsistent, we assign the most frequently reported issuer type for each nine-digit CUSIP across all filings.

To distinguish between corporate bonds and private ABS, we rely on the annually reported asset type field. Securities are classified as corporate bonds if the asset type is listed as "long-term bond" or a closely related category; asset-backed securities are identified where the asset type is listed as "asset-backed security" or similar. As with issuer type, we assign each security the most commonly reported asset type across insurers

to ensure consistency.

Credit quality for each CUSIP is determined using the NAIC designation variable also reported in Schedule D. Starting in the 2020 filings, insurers were required to report ratings at the notch level (e.g., A+, A, A–). Before 2020, NAIC designations reflected broader rating bands, with NAIC 1 encompassing all securities rated A or higher, and NAIC 2 covering BBB-rated instruments. The NAIC designation typically reflect the rating assigned by one of the eight nationally recognized statistical rating organizations (NRSROs) approved as an NAIC Credit Rating Provider (CRP), including S&P, Moody's, and Fitch. Securities without a rating from a CRP are assigned a rating designation by the NAIC's internal Securities Valuation Office (SVO).

3.2 Identifying Private Placements

To assign each private placement in our data set to an industry, we build on the work of Fournier, Meisenzahl, and Polacek (2024a) to undertake a multi-step issuer matching procedure. First, for any private placement issued by a public-company issuer, we leverage the Mergent FISD database. We match the bond's six-digit issuer CUSIP to Mergent FISD records to retrieve the issuer's NAICS (North American Industry Classification System) code. Then at the two-digit NAICS code level, we separate out utilities and infrastructure (22), finance and insurance (52), and real estate (53), and label the remainder as non-financial.[14]

To match private issuers of private placements to their respective industry, we turn to string matching using the description of the issue listed in the Schedule D filings. We start by pulling the full list of BECRS (Business Entity Cross Reference Services) CIQ (S&P Capital IQ) codes for private companies. We use a Jaccard name matching algorithm to match each company name in the BECRS and S&P data to the bond description variable in NAIC statutory filings.[15] We first attempt to match on the company's own name; if an issuer's name does not yield a high-similarity match in the BECRS and S&P data, we then try matching based on the parent company name.

[14] We detail the match rates by data source in the Appendix, table A1 and figure A1.

[15] Jaccard name matching algorithm tokenizes each name into a set of words or character shingles and then calculates the Jaccard similarity, or the ratio of the intersection to the union of these token sets, between every pair of names. Pairs exceeding a specified Jaccard similarity threshold are kept as matches. This method has been widely used in many strands of economic literature.

To supplement our private issuer matching, we pull the entire sample of companies in the National Establishment Time Series Database (NETS) from Dun and Bradstreet and again use Jaccard name matching for previously unmatched private placement issuers.[16] To further supplement our matching process, we use closed-end fund (CEF) data from the SEC. We match these funds to the bond description variable in our NAIC statutory filings for any issuer that was not previously matched. Since all the entities recorded in the CEF database are financial entities, their industry is labeled as such.

Together, this matching process successfully matches 86% of the total actual cost-weighted value of private placement bondss from 2004-2024 and 78% of the value in 2024. The matching results are broken out by source in the appendix.

3.3 Identifying Private Equity Owned Insurers

We identify private equity owned insurers in three ways. First, we identify private equity acquisitions of life insurers in the news. Second, we use deals in the S&P Mergers and Acquisitions database where private equity involvement is identified. Third, we use the NAIC Jurat data to identify NAIC groups with private equity ownership and track individual insurers that move into these groups. Only insurers where private equity has a majority ownership stake are included as a "pe-owned insurer". [17]

Tables 1-3 provide the summary statistics for our regression samples.

4 Empirical Analysis

We start our analysis by documenting the growth and sectoral shifts in private placement investment of life insurers. We then show that these shifts are driven mainly by life insurers that were taken over by private equity companies. Next, we document that private placements earn higher yields than comparable public bonds and link this to lower liquidity in the secondary market. Finally, we show that insurers' investing more in financial sector and asset-backed security private placements expanded their market share in the annuities market.

[16] The NETS data contains industry variables and parent company information.

[17] We access S&P Merger and Acquisitions Database and the NAIC Jurat data via S&P Capital IQ Pro and S&P Market Intelligence.

4.1 Evolution of PP investments

Life insurer investments in private placements reached about $849 billion in 2024 more than doubling since 2014. To understand whether this growth was driven by increased credit provision to traditional sectors (e.g. utilities and infrastructure) or an expansion into new sectors, we classify private placements by industry as described in Section 3.3.

Figure 3 shows the evolution of life insurers' private placement holdings by industry over this period. The data reveal significant sectoral shifts starting in 2017: Utilities and infrastructure accounted for 17.4% of private placements in 2017, but their share declined to 14.9% in 2024, even though total private placement lending to these sectors increased by about $45 billion over this period. In contrast, the financial sector and asset-backed security (ABS) categories grew substantially. The share of financial sector investments (e.g. financial firms and REITs) rose from 22.2% to 24.5%, reaching a total of roughly $198 billion in 2024. Likewise, the share of privately placed ABS jumped from 10.0% to 15.5%, with total ABS holdings tripling to around $125 billion over the same period. This pattern marks a notable broadening of insurers' credit intermediation: a sector that traditionally financed large corporates and infrastructure is now extending credit to other financial intermediaries and structured vehicles.

A significant portion of the surge in private-placement ABS is tied to affiliates of private-equity-owned insurers. Of the $82 billion increase in privately placed ABS holdings from 2017 to 2024, about $50 billion was issued by financing vehicles affiliated with life insurer owned by private equity firms. Apollo's insurance arm Athene, together with its related entities, accounted for roughly $21 billion of this growth in privately placed ABS holdings, while KKR's Global Atlantic contributed about $18 billion and Blackstone's Everlake and Resolution Life added around $10 billion. Much of the ABS debt issued by these affiliates is held on the sponsoring insurer's own balance sheet, but a considerable portion (about 24%, or $13 billion in 2024) has been purchased by other insurers. The collateral backing private ABS deals is varied but predominantly corporate and specialty assets, such as credit tenant leases, ground leases, middle-market loans, intellectual property royalties, and other corporate receivables, rather than the consumer loan pools typical of public ABS.

The largest issuers of private placement ABS include a mix of funds and stand-alone

entities. The ABS are backed by different types of collateral rangeing from commercial loans to royalty payments.[18] The largest financial issuers also include a range of companies. However, many of them engage in commercial lending activities and have with ties to life insurers.[19] These investments reflect a shift in insurer investment strategy, with life insurers increasingly channeling capital into previously underexplored segments like middle-market credit and niche structured finance.

Alongside the sectoral reorientation, the nature of private placement deals has evolved. Rather than the traditional private placement format of buying long-term, fixed-rate corporate notes, insurers are now also taking on more floating-rate and structured credit exposure. The share of floating-rate private placements in life insurers' portfolios has climbed to its highest level since before the 2008 financial crisis. This uptick in floating-rate holdings coincides with a shift in many insurers' liabilities toward fixed-indexed annuities (which credit yields linked to equity indices on top of a guaranteed floor) as assets with adjustable coupons are a better match for index-linked liabilities than fixed rate annuities. On the supply side, the rise in floating-rate deals is linked to the greater involvement of private credit funds and asset managers in issuing private placements. In practice, many of the new private placements are essentially direct lending instruments: loans to mid-sized or unrated firms, often packaged by asset managers into single-tranche ABS or note structures.

Figure 4, left panel shows the ratings distribution of public bonds, private placements,

[18]For example, AP Grange Holdings is a stand-alone entity created by Apollo to finance a joint venture deal in Intel Ireland's state-of-the-art Fab 34 wafer manufacturing facility. Atlas Securitized Products Fund is an Apollo spin-off from the former Credit Suisse portfolio that provides structured financing solutions for specialty finance companies, financial sponsors, corporates, REITs and other clients. Blue Eagle 2021 is a KKR vehicle backed by a corporate loan portfolio. Hannon Armstrong finances large energy projects and investments in sustainable infrastructure. Blackstone Rated Senior Direct Lending Associates LLC is a direct lending platform. Softbank Vision Fund is a technology-focused venture capital fund. Lightning 2021 and Thunderbird 2021 are KKR-affiliated securitized asset and private equity funds. Trademark Royalty 2018 is a Goldman Sachs product that monetized 30 years of royalty payments to Vanderbilt University by the Vanderbilt University Medical Center in exchange for the rights to use the university's name.

[19]Example include Madison Capital Funding, a New York Life subsidiary focused on direct lending to private equity-backed middle-market companies; direct lending affiliates of MassMutual Life; unaffiliated private asset funds, such as Cliffwater Corporate Lending, Vanguard Group, and Bain Capital; Cayman Island-domiciled special purpose vehicles; Arthur J Gallagher & Co., a publicly traded insurance brokerage; Hardwood Funding LLC, the National Basketball Association's league-wide credit facility that issues debt backed by NBA media revenue; and investment managers in the real estate sectors including Clarion Lion Properties Fund, Morgan Stanley's Prime Property Fund, and Prologis' Targeted U.S. Logistics REIT.

and financial private placements in life insurers' portfolios. While the ratings distribution of private placements is only slightly more skewed to lower ratings that the one of public bonds, the ratings distribution of financial private placement is considerably more skewed to lower rated issuance. The right panel show the ratings distribution of public ABS, CLO, and private placements ABS. While the distribution of private placements is skewed to lower rated issuance, the main caveat is that most ABS private are not tranched and, as such, less AAA-rated private placement ABS exist. As such, the ratings distribution is not necessarily evidence of regulatory arbitrage in ABS private placement. When compared to the ratings distribution of financial private placements holding, the ABS private placements are better rated, on average.

Taken together, the evidence shows that life insurers increasingly lend to other financial firms through private placements, and these deal appear to be more complex than traditional private placements. Hence, life insurers have become more exposed to private credit directly through private placements and indirectly by lending to firms and funds that focus on direct lending themselves. This development suggests that the life insurance sector has become more interconnected with each other by co-lending in private placements and with other parts of the financial sector.

4.2 PE drives Private Placement Investment Shifts

Next, we assess which characteristics of life insurers account for the increase in private placement lending. We consider all investments in private placement and then zoom in on private placements to the financial sector and ABS, which experienced the most growth and increased interconnectedness with other parts of the financial system.

We hypothesize that three characteristics could be closely associated with increased private placement lending: a) PE-ownership, b) historical private placement lending, and c) strategic partnerships between traditional life insurers and asset managers including private equity.

The first characteristic, PE ownership, is related to access to new segments of the private placement market and risk appetite. First, as documented above, life insurers lend to financial firms that are themselves connected to PE and the direct lending space. Second, Kirti and Sarin (2023) show that up to 2014 PE-owned life insurers shifted their

bond portfolio to more public ABS, suggesting a higher risk tolerance of these insurers. We therefore expect that PE-owned firms expand their private placement holdings more than non-PE-owned firms.

The second characteristic, insurers that historically had more exposure to the private placement market, measures specialization. Insurers with more specialized expertise in private placements are better positioned to take advantage of emerging opportunities in this market. Hence, if specialization drives private placement investments, we would expect the historic (2017) private placement share of assets to predict the growth in private placement investments between 2017 and 2024.

The third characteristic, strategic partnership with asset managers, is a specific channel through which life insurers could participate in the private placement market. Ozdagli and Ryfe (2025) show that life insurers' portfolios are more likely to include the same bonds if they have the same asset manager. This suggests that asset manager distribute bonds and private placements across insurers. We therefore expect life insurers partnering with asset managers to hold more private placements.

We test the three hypotheses on the importance of each of these characteristics below by first providing graphical evidence and then conducting regression analyses.

4.2.1 Graphical Evidence

Figure 5 shows PE-ownership growth and difference in investments by PE-ownership status. PE-owned insurers had a considerably smaller share of private placements in 2017 but by 2024 the share equalized to 14 percent for both groups, suggesting that prior specialization did not account for the growth in private placement lending. Instead the figure suggests that PE ownership was a key determinant in private placement growth.

While the asset share of private placements was 14 percent in 2024 for PE-owned and non-PE-owned insurers, the trajectory from 2017 onward and sectoral composition differs substantially. The private placement share of general account assets for PE-owned insurers was only 6 percent in 2017 but increased by 8 percentage points to 14 percent in 2024. For non-PE-owned insurers, the increase was only 4 percentage points over the same time period. The growth in financial and ABS private placements accounted for three-fourth of the entire private placement growth (6 percentage points of assets) of

PE-owned insurers. By 2024, financial and ABS private placements reached 8 percent of assets for PE-owned insurers, while they were only 4 percent of non-PE-owned insurers' assets.

We also compare changes in CLO holdings as they are the focus of the prior literature (Carlino et al. 2024; Kirti and Sarin 2023). Between 2017 and 2024, PE-owned insurers' CLO share of assets remained unchanged, and non-PE-owned insurers' CLO share increased only somewhat.

Figure 6 shows that although PE-owned insurers controlled 14 percent of the industry's general account assets in 2024, they held nearly 40 percent of financial and ABS private placements. At the same time, PE-owned insurers held only 14 percent of private placements, further highlighting the relative importance of PE ownership for the growth of private placements in the financial and ABS segment. While PE-owned insurers also invest more in CLOs, their share of industry CLO investments is 25 percent, indicating that CLO investments are less concentrated in PE-owned insurers than financial and ABS private placements.

4.2.2 Cross-sectional evidence

We now supplement the graphical evidence for PE being the main driver of increased private placement investments, especially in financial and ABS private placements, with regression analyses. One potential concern with the analyses is that PE strategically took over life insurers that exhibited large growth in financial and ABS private placements. Indeed, figure 7 shows that PE ownership increased significantly after 2020.

In our cross-sectional regressions, we therefore separately include indicators for whether the life insurer was PE owned in 2017 or taken over by PE between 2018 and 2023 and estimate the following regression.

$$\Delta PP_i = \beta_1 \text{PE Insurer 2017}_i + \beta_2 \text{New PE Insurer}_i + \gamma X_i + \epsilon_i \tag{1}$$

where ΔPP_i is the percentage point change in the private placement share of assets. PE Insurer 2017 equals one if the life insurer was PE-owned in 2017, New PE Insurer equals one if the life insurer was taken over by PE between 2018 and 2023, and X_i is a vector

of controls including the log of total assets and the annuity market share.

Table 4 shows the results of estimating equation 1. Column 1 shows that for life insurers that were previously owned by PE—that is, taken over before 2017, the private placement share of assets expanded by 7.7 percentage points from 2017 to 2024. This estimated effect is more than one standard deviation of the change in the private placements share (6.07). The point estimate is highly statically significant. For insurers that were taken over by PE between 2017 and 2023 the point estimate is a somewhat smaller at 5.8 percentage points. The findings are consistent with the larger increase in the private placement share of assets shown in figure 5.

Next, we test whether specialization in private placements measured the private placement share of general account assets drove the expansion in private placements. Column 2 shows that the point estimate is negative and highly statistically significant. We can therefore reject that life insurers that had previously specialized in private placements account for the rapid growth in private placements.

The third hypothesis is that asset managers investing for life insurers account for the growth in private placement lending. Column 3 shows the results. We do not find any evidence that relationships with asset managers, either established by 2017, newly established between 2018 and 2023, or with PE asset managers drove the expansion of private placements.

Last, we test the three hypotheses together. Column 4 shows that the point estimates on PE-ownership remain basically unchanged, economically large, and statistically significant, while the effect of specialization remains negative and unchanged. Taken together, columns 1-4 indicate that PE-owned insurers account for the growth in private placements.

In columns 5-8, we repeat the regression with the change in the share of financial and ABS private placements. PE ownership is associated with a 2-3 percentage points increase in the financial and ABS private placement share. These effects are economically large compared to the standard deviation of the change in the financial and ABS private placement share (1.53). We can again reject that specialization drove increases in private placements and find no effect of asset manager relationships.

In contrast to the findings for the changes in the share of private placements, we do

not find that insurers owned by PE in 2017 increased their holdings of CLOs (column 9). However, we do find an effect of newly taken over insurers consistent with the literature on the broader transformation of insurer balance sheets after PE takeovers. Prior specialization in private placements and asset manager relationship do not explain changes in the CLO share.

In sum, we find support for PE ownership driving the growth in the private placement share of insurers' balance sheets. About one third of the estimate effect comes in part from new segments, financial and ABS private placement, and is consistent with prior specialization having a negative relationship with these investments.

4.2.3 Dynamic Estimation

To tighten identification between growth in private placements and PE-ownership of life insurers, we now estimate the change in private placement holdings dynamically and focus on the growth in financial and ABS private placements. Specifically, we estimate the following regression using the doubly robust difference-in-difference estimator based on the work of Callaway and Sant'Anna (2021) and Sant'Anna and Zhao (2020).

$$\text{Share PP}_{it} = \alpha_i + \delta_t + \sum_{t-5}^{t+5} \beta_t PE_{it} + \gamma X_{it} + \epsilon_{it} \tag{2}$$

where Share PP_{it} is the private placement share of general account assets of insurer i in year t and PE_{it} is an indicator that is equal to 1 if the insurer is owned by PE. We include time fixed effects (δ_t), insurer fixed effects (α_i), and a vector of controls X_{it-1} that includes log general account assets, alternative investment share of GA assets, bond investments of GA assets, statutory leverage ratio, and share of industry annuity reserves.

Figure 8 plots the results of estimating equation 2.[20] Panel a) shows the results for all takeovers of insurers by PE. There is no evidence of a pre-trend, indicating that PE did not systematically acquire insurers already increasing their investments in financial and ABS private placements. After the takeover, the private placement share increases significantly for PE targets to about 6 percentage points after two years. The differences are persistent. We detect a positive and significant effect even five years after the takeover, indicating a permanent change.

[20] The summary statistics for the sample are reported in the Appendix.

We repeat the analysis, estimating the effects separately for three different acquisition waves: 2014-2016, 2017-2019, and 2019-2021. Panels b) through d) show the results. While the estimated coefficients in the post-period are positive for all three waves, we find the largest effects in the 2017-2019 acquisition wave, where the estimated effect reaches 8 percentage points after five years. While the coefficients for the later waves are estimated somewhat imprecisely, the evidence supports the interpretation that PE-owned insurers drove the expansion of private placement investments.

We repeat the regressions focusing on the financial and ABS private placements share of assets shown in panels e) through h). The patterns are very similar to those estimated with all private placements. While the estimated effect is somewhat smaller, peaking at about 4 percent in the sample with all acquisitions. However, the effect on more recent acquisitions is larger and are more precisely estimated, with the effect reaching 7 percent (panels g) and h)).

The results show that PE-owned insurers drove both the overall increase and the sectoral shift in private placement activity. One implication of these sectoral changes is that PE-owned insurers significantly increased their linkages with other parts of the financial system through financial and ABS private placements.

4.3 Why Private Placements are Attractive Investments

We now investigate why insurers have increased their investments in private placements. We hypothesize that the main reason for investment in private placements is that they offer higher yields than comparable longer-duration assets, such as public corporate bonds.

To test this hypothesis, we first calculate the spreads on all fixed-rate bonds and private placements held by life insurer by subtracting the maturity-matched Treasury rate. We are interested in the additional spread insurers can earn by investing in private placements. Since it is well known that public ABS such as CLOs pay higher yields compared to corporate bonds (see, e.g., Kirti and Sarin (2023)), we treat public and private placement ABS as separate categories. We estimate the following cross-sectional regression on the CUSIP level using assets held in 2024 and purchased in 2020 or later

with public corporate bonds as the baseline category:

$$Spread_c = \alpha + \beta_1 \mathbb{1}_{\text{PP}_c} + \beta_2 \mathbb{1}_{\text{Public ABS}_c} + \beta_3 \mathbb{1}_{\text{PP ABS}_c} + \gamma X_c + \epsilon_c \tag{3}$$

where $X_{c,t}$ is a vector of bond controls that includes the bond rating, origination month, maturity at purchase in years, and credit seniority. The coefficients on the indicator functions capture the additional spread over public bonds for private placements (β_1), public ABS (β_2), and private placement ABS (β_3).

Figure 9 shows the results from estimating equation 3. Spreads of private placements are, on average, 60 bps higher than those on a public bond. Within the private placements, we find that non-financial private placements have a spread of 39 bps while financial private placements have a spread of 78 bps. This difference is smaller than the 116 basis points documented byBöni, De Roon, and Joos (2020) for 310 European issuers of public and private bonds.

For public ABS the difference in spreads is 82 bps consistent with prior literature linking such spreads to regulatory arbitrage (Carlino et al. 2024; Kirti and Sarin 2023). The difference in spreads is even larger for private placement ABS. The difference in spreads between private placement ABS and a public corporate bond is estimated to be 156 bps.

One potential explanation for why private placements earn higher spreads than comparable public bond and ABS counterparts could be differences in secondary market liquidity.[21] We provide two pieces of evidence that private placements are indeed less liquid that public corporate bonds and ABS by comparing the frequency of sales and the structure of the secondary market for each of the asset classes.

The first piece of evidence are the frequencies with which private placements and public bonds are sold by life insurers. Figure 10, panel a) shows that while there is a secondary market for private placements, life insurers are considerably less likely to sell private placements than public corporate bonds. While the post-2008 Financial Crisis average sales rate for public bonds is about 8 percent, the sales rate for private placements only half of that, about 4 percent. We see the same pattern in the ABS sales rates. While

[21] Carlino et al. (2024) argue that life insurers earn an illiquidity premium other investments, specifically in CLOs, BDCs, and joint venture loan funds (JVLFs), as well.

public ABS have an average annual sales rate of about 6 percent, the sales rate of private placement ABS is only 3 percent, on average (panel b). One potential explanation for the lower sales rate is a smaller pool of potential buyers which consists mostly of other life insurers.

The second piece of evidence that the secondary market for private placements is less liquid than for public bonds is the way private placements are traded. Figure 11 shows that while almost 90 percent of public corporate bonds and about 85 percent of public ABS are traded using a broker, about 80 percent of private placement trades are over the counter. Trading private placements over the counter requires search for a potential buyer, which increases trading cost relative to a public bond. While close to 20 percent of private placement trades involve a broker, the brokers most often intermediating the trades, StoneCastle Securities and The Seaport Group, are small, highly specialized, and have limited balance sheet capacity. This suggests that trading private placements using one of these brokers is also more costly than trading public bonds using a larger broker.

In sum, life insurers earn higher spreads and return on assets by investing in private placements compared to their public counterparts. The differences in spreads appear to be driven at least in part by differences in liquidity of the asset classes.

4.4 Private Placement Investments and Annuity Market Share

We now link the investment in private placement to PE-owned insurers expansion in the annuity market. Specifically, we test whether increased investments in higher yielding private placement (financial and ABS private placements) allow PE-owned life insurers to increase their market share in the annuities market. Earning higher spreads allows life insurers to offer higher guarantees and thus attract new customers.

As discussed in section 2.2, annuity reserves grew significantly between 2017 and 2024, which much of the growth occuring in the indexed annuities segnment (see also gigure 2). While the annuity market exhibits steady growth, we see significant increases in indexed annuity reserves from about $300bn in 2017 to $500bn in 2024. The share of indexed annuities increased from 19 percent in 2017 to 26 percent in 2024. At the same time, we observe significant increases and compositional changes in private placement investments. As described above, fixed indexed annuities grew in response to low interest rate

environments with high (stock) market returns.[22] Hence, investing in private placements with higher spreads allowed insurers to offer higher yields on annuities.

Figure 12 shows that PE-owned insurers capture an outsized share of the indexed annuity market. While PE-owned insurers account for 14 percent of general account assets in 2024, they held over 35 percent of indexed annuity reserves. Having documented that PE-owned insurer also drove the increase and compositional shift in private placements (see section 4.2), we hypothesize that investments in financial and ABS private placements allowed PE-owned life insurers to capture market share in the (indexed) annuity market.

One issue with testing this hypothesis is that we only observe aggregate premiums and not premiums by annuity type. However, we observe annuity reserves by type. We therefore test this hypothesis in two ways. First, we test the relationship between annuity premium shares and financial and ABS premium share. Second, we test whether after PE takeovers we observe an increase in indexed annuity reserves. While annuity reserves can also increase through the purchase of annuities blocks, the fact that indexed annuity expanded disproportionately during the sample period suggests that new policies drive the results.

4.4.1 Cross-sectional evidence

We start formally testing whether increases in financial and ABS private placement investments allow (PE-owned) insurers to capture a larger annuity market share by estimating whether changes in private placement investment predict changes in the share of annuity premiums or the annuity reserve share.

$$\Delta\text{Annuity Share}_i = \beta_1 \Delta\text{Fin \& ABS PP}_i + \beta_2 \Delta\text{Fin \& ABS PP x PE}_i + \beta_3 \text{PE}_i + \gamma X_i + \epsilon_i \tag{4}$$

where ΔAnnuity Share$_i$ is the change in the premium share of insurer i from 2017 to 2024. ΔFin & ABS PP is the change in financial and ABS private placement share of assets, and PE is an indicator that is equal to 1 if the insurer is PE-owned. Insurer controls (X_i) are log GA Assets, share of industry annuity reserves, and change in reserves assumed in

[22] Verani and Yu (2024) highlights the effects of interest rate risk in the annuity markets.

2017.

Table 5 shows the results of estimating equation 4. Columns 1 shows that changes in financial and ABS private placement investment predict changes in premium market share. The effect is economically significant. The point estimate implies that a one-standard-deviation increase in the financial and ABS private placement share (1.78) increases the premium market share by 0.07 percent. When compared to the average change in the premium share between 2017 and 2024 of -0.02 percent, this finding indicates that insurers that invested differentially more in financial and ABS private placements captured market share from insurers that did not invest in these private placements over the sample period.

Next, we assess whether PE-ownership drives this result. Column 2 shows the results for PE ownership in 2017. We find that premium market share increases due to investments in financial and ABS private placements are concentrated in PE-owned insurers. The interaction term of these investments with PE is the same as in column 1 and the base effect cannot be distinguished from to 0. This indicates that PE-owned insurers aggressively invested in financial and ABS private placements in order to capture market share in the primary annuities market.

In column 3, we add the interaction with an indicator for PE acquisitions between 2017-2023 and do not detect a significant effect of changes in investments in financial and ABS private placements on the premium share for these insurers.

In columns 4 and 6, we repeat the estimations with the changes in the CLO share and do not find any significant results, except for PE-ownership in 2017. This result suggests that increases in public ABS investment did not support the expansion of PE-owned insurers in the primary annuity market.

We also consider the change in the annuity share from 2017 to 2024 as a measure of market share and estimate equation 4 with the annuity share as dependent variable. Table 6 shows the results. While we do not detect an effect for changes in financial and ABS private placements on the change in the annuity share (column 1), its interaction with the PE ownership in 2017 is large and significant. A one-standard deviation increase in the change in financial and ABS private placement investment increases the annuity share by 0.11 percentage points (column 2). As for the change in the premium share, we

do not find an affect for insurers acquired by PE after 2017. Similarly, columns 4-6 show no significant results for changes in CLO holding.

Taken together, the cross-sectional regressions show that increased investments in financial and ABS private placement, which have higher spreads, allowed PE-owned firms to capture annuity market share.

4.4.2 Dynamic Annuity Market Share Regression

The complement the cross-sectional regression with evidence that insurers expand their market share in the annuity market measured as either annuity premium share or annuity reserve share after a PE takeover. We estimate the following regression using the doubly robust DID estimator based on the work of Callaway and Sant'Anna (2021) and Sant'Anna and Zhao (2020).

$$\text{Annuity Share}_{it} = \alpha_i + \delta_t + \sum_{t-5}^{t+5} \beta_t PE_{it} + \gamma X_{it} + \epsilon_{it} \tag{5}$$

where PE_{it} is an indicator that is equal to 1 if the insurer is PE-owned, δ_i time fixed effects, α_i insurer fixed effects, and X_{it} a vector of controls.[23]

Figure 12 shows the results of estimating equation 5 for both measures of market share and different acquisition waves. Panel a shows that, while imprecisely estimated, a positive coefficient on PE for premium share as market share measure. With the share of annuity reserves as measure of market share, we find positive and statistically significant effects 4 years after the acquisition (panel b). After five years, the average PE-owned insurers increased its premium market share by 0.002 percentage points and its annuity reserve share by 0.21 percentage points.

These aggregate patterns are driven by by 2014-16 acquisitions (panels c) and d)). In contrast, for 2019-21 acquisitions, we find a much smaller effect on the premium share (panel e) and a smaller effect on the indexed annuity reserve share (panel f).

In sum, we find that PE-owned insurers, especially those that heavily invested in financial and ABS private placements expanded their annuity market share, indicating that these new investments facilitated the expansion in insurance product markets.

[23]The summary statistics are reported in the appendix.

5 Conclusion

We document that life insurers are large providers of private credit, reaching $849 billion in 2024. Over the last decade, private placement provision by insurers has continuously increased and expanded to new sectors, in particular financial firms and ABS. This trend was driven by PE-owned life insurers. We show that the private placements pay higher spreads, likely because of low liquidity in the secondary market for private placement. Investments in financial and ABS private placements allowed PE-owned life insurers to capture annuity market share.

While private placements have been a crucial source of funding for private firms and project finance for a long time, these increases and sectoral changes in private placements expose life insurer to more liquidity risk. In addition, lending to financial firms and holding ABS private placements led to more interconnections with the broader financial system. Both developments increase the systemic importance of life insurers and calls for additional research examining private placements.

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Figures and Tables

Figure 1: Life Insurer Private Placement Holdings

This figure shows the evolution of private placement holdings of US life insurers by issuer sector. Identification of private placement is described in section 3.3. Source: NAIC statutory filings provided by S&P Capital IQ Pro.

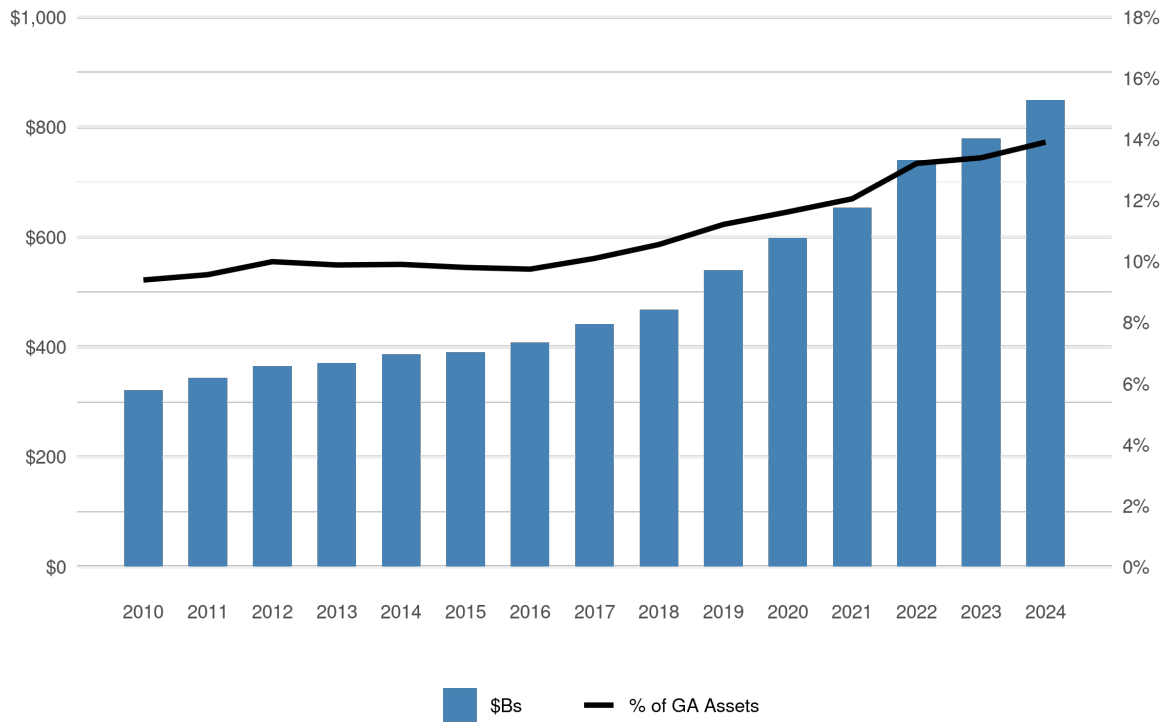


Figure 2: Life Insurer Annuity Reserves ($Bs)

This figure shows the evolution of US life insurers annuity reserves by type. This figure does not include reserves ceded to offshore affiliates. Source: NAIC statutory filings provided by S&P Capital IQ Pro.

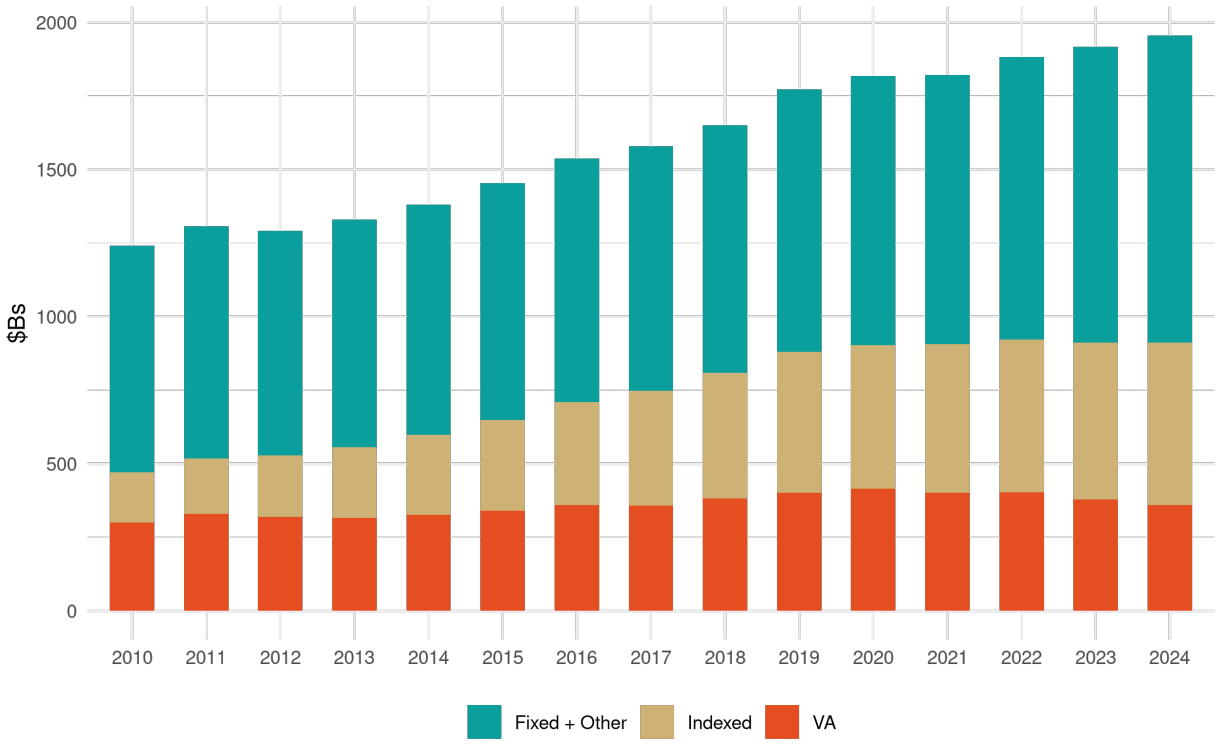


Figure 3: Sectoral Composition of Private Placements 2005-2024

This figure shows the evolution of private placement holdings of US life insurers by issuer sector. Identification of private placement is described in section 3.3. For details on the sectoral classification, see the Appendix. Source: NAIC statutory filings provided by S&P Capital IQ Pro, S&P BECRS, and NETS.

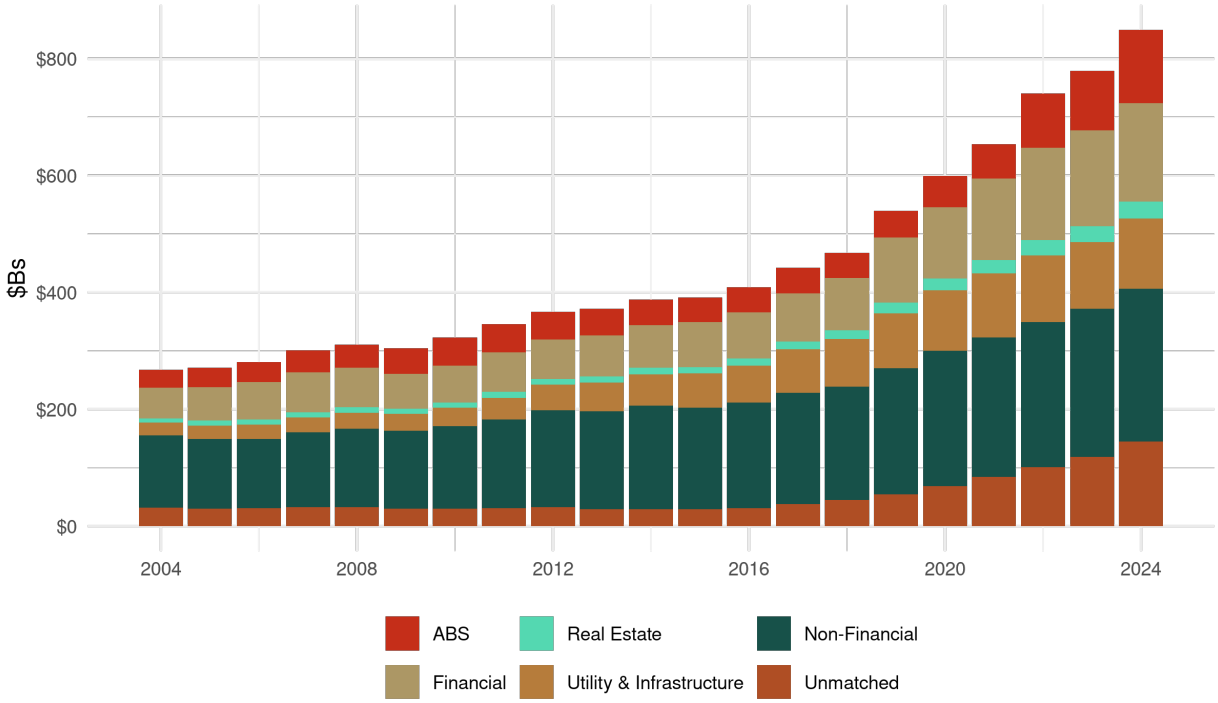
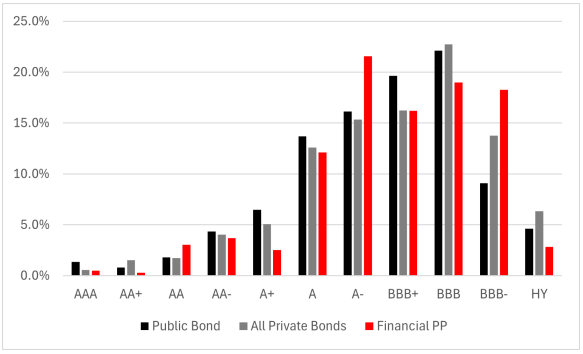
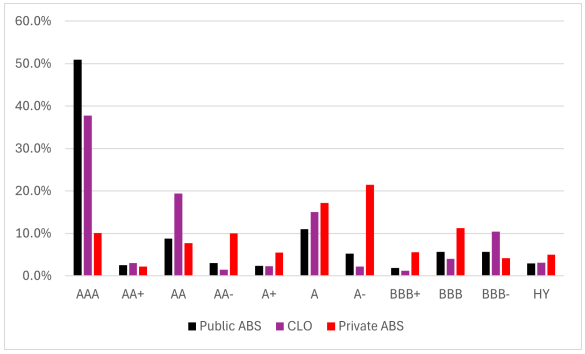


Figure 4: Ratings Distribution 2024 year-end

This figure compares the ratings distribution of public and private placement bonds and ABS of life insurers' 2024 year-end holdings. Source: NAIC statutory filings provided by S&P Capital IQ Pro.



a) Public Bond and Private Placements



b) Public and Private Placement ABS

Figure 5: Determinants of Private Placement and CLO Holdings

The bottom panel of the figure shows he share of general account assets invested in each asset category for top 25% and bottom 75% quartiles of the 2017 private placement holdings distribution. The middle panel shows the share of general account assets invested in each asset category by PE-ownership status in 2017 and 2024. The bottom panel shows the share of general account assets held in each category for insurers who self-manage their investments and insurers who outsource to an unaffiliated asset manager. Source: NAIC statutory filings provided by S&P Capital IQ Pro, S&P BECRS, NETS, and S&P Merger and Acquisition Database.

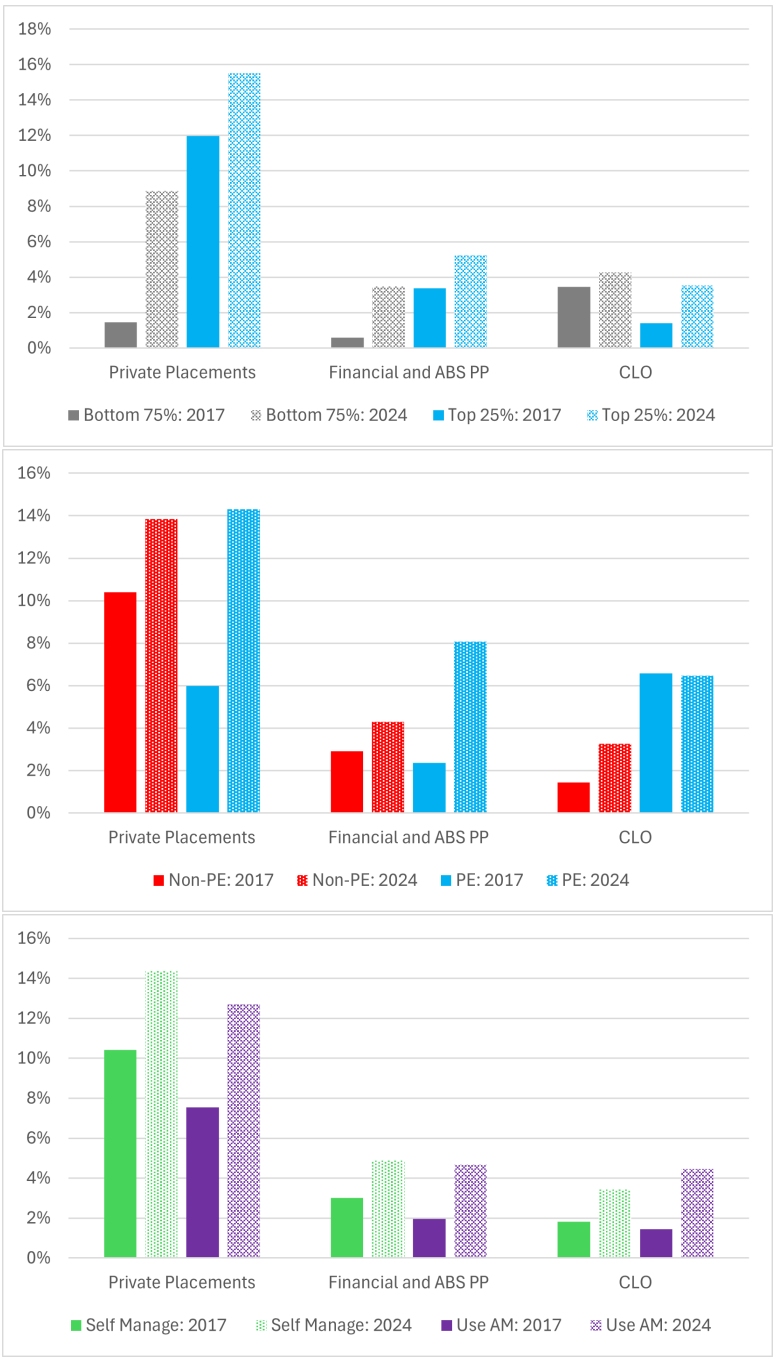


Figure 6: PE Share of Asset Category

This figure shows the share of assets held by PE-owned insurers of total assets held by life insurers in the respective asset category. Source: NAIC statutory filings provided by S&P Capital IQ Pro, S&P BECRS, NETS, and S&P Merger and Acquisition Database.

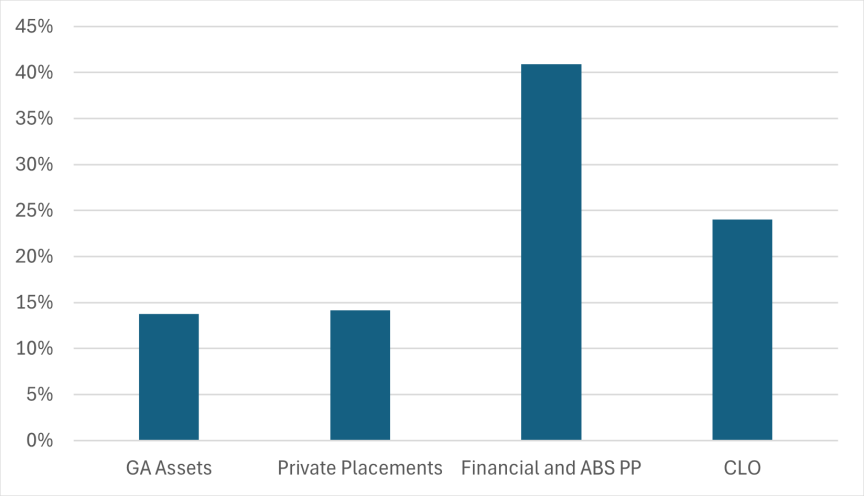


Figure 7: PE Control of General Account Assets

This figure shows the evolution of the share of life insurance industry general account assets held by PE-owned insurers from 2010 to 2024. Source: NAIC statutory filings provided by S&P Capital IQ Pro, and S&P Merger and Acquisition Database.

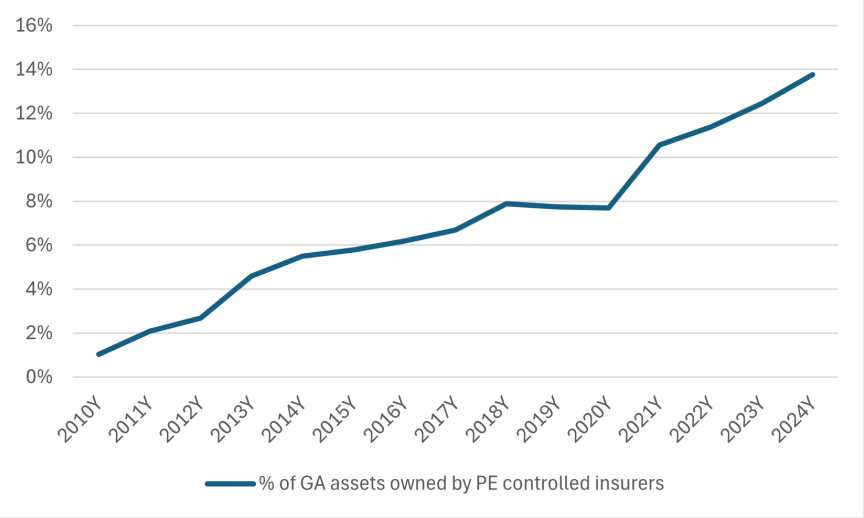
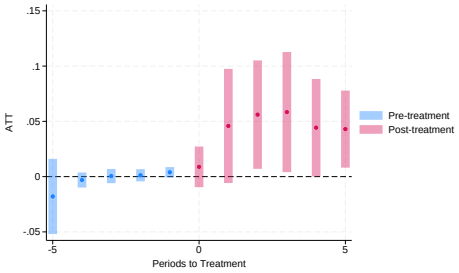


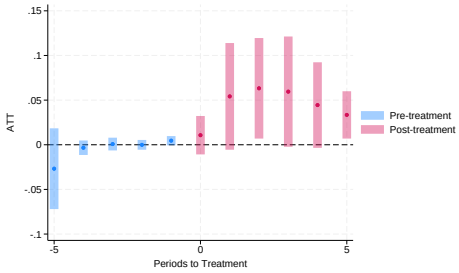
Figure 8: Dynamic Regressions - Private Placement Growth

This figure shows the results from estimating equation 2 with the treatment being the take-over by PE. We show the results for all take-overs, and separately take-overs between 2014-16, 2017-19, and 2019-21. The results shown use the doubly robust DID estimator based on the work of Callaway and Sant'Anna (2021) and Sant'Anna and Zhao (2020).

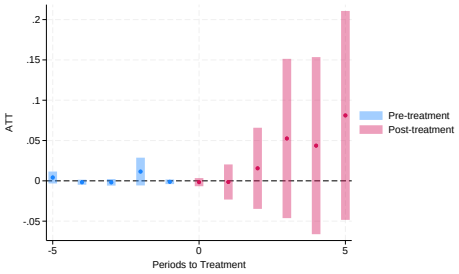
All Private Placements



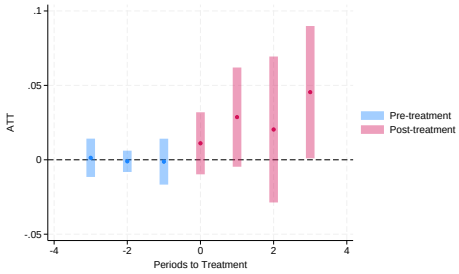
a) all takeover



b) 2014-16 takeovers only

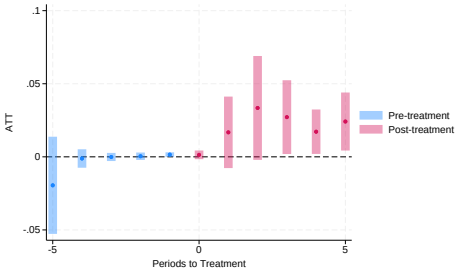


c) 2017-19 takeovers only

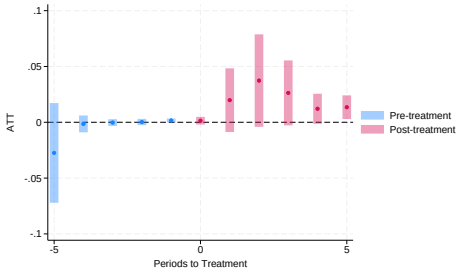


d) 2019-21 takeovers only

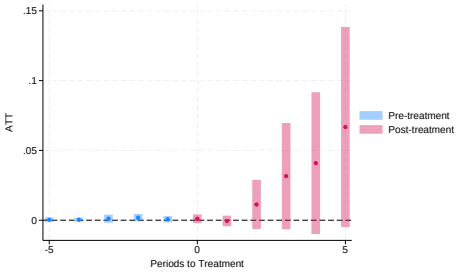
Financial and ABS Private Placements



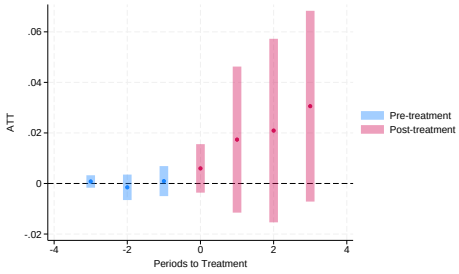
e) all takeover



f) 2014-16 takeovers only



g) 2017-19 takeovers only



h) 2019-21 takeovers only

Figure 9: Spread over Public Bond Yield

This figure plots the coefficients from estimating equation 3. Public bonds are the omitted category. The bars indicate 95% confidence intervals. Source: NAIC statutory filings provided by S&P Capital IQ Pro.

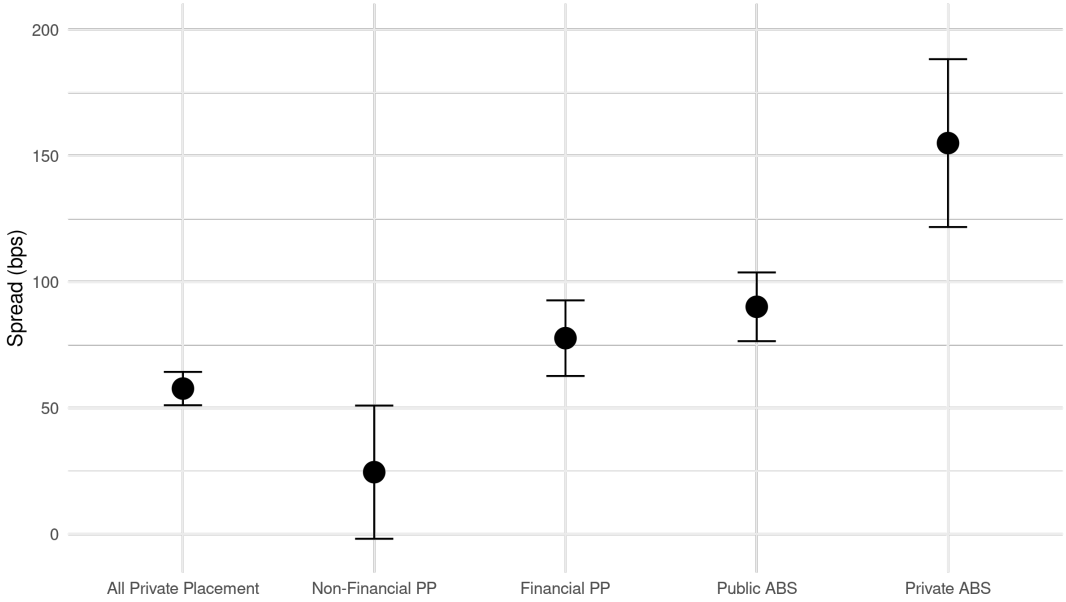
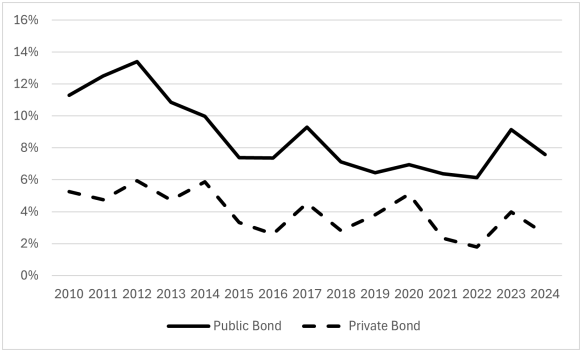
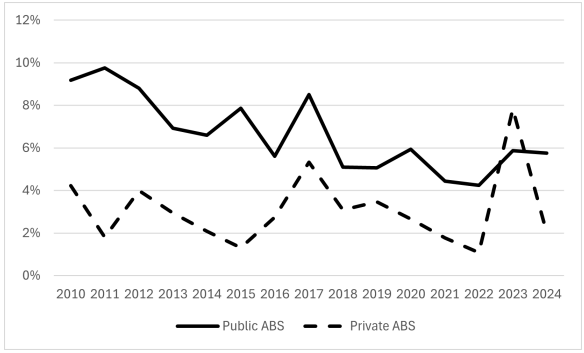


Figure 10: Sales Rates

This figure shows the average probability of observing a sale of an asset in the respective category by a life insurer. The sales information is taken from Schedule D Part 4 . Source: NAIC statutory filings provided by S&P Capital IQ Pro.



a) Public Bond and Private Placements



b) Public and Private Placement ABS

Figure 11: Sales by Transaction Type, 2017 to 2024

This figure shows whether a sale of an asset was intermediated through a broker.. We consider public bonds, CLO, other public ABS, private placements, and private placement ABS separately. Source: NAIC statutory filings provided by S&P Capital IQ Pro..

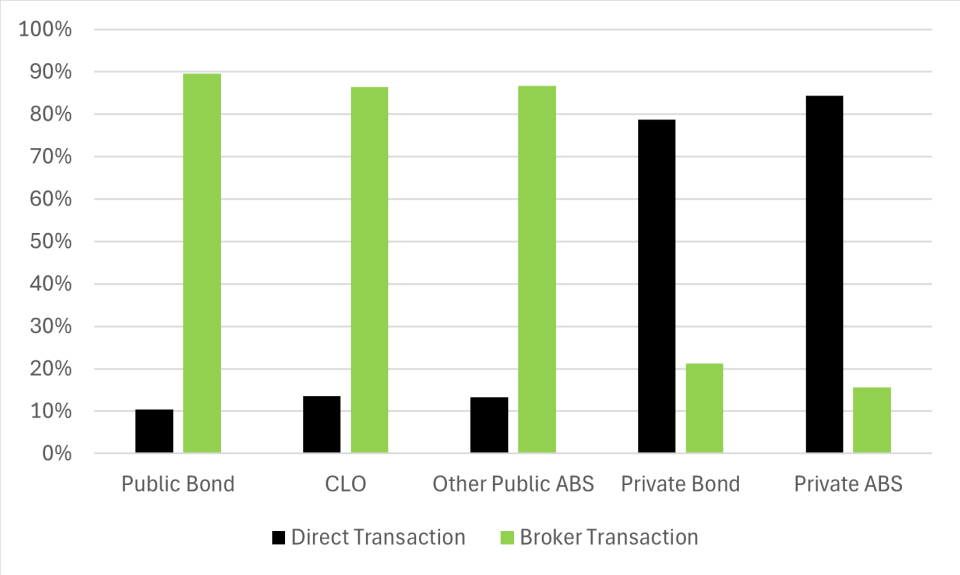


Figure 12: Annuity Reserves

This figure shows the evolution of annuity reserves by annuity type and PE-ownership. Does not include annuity reserves ceded to offshore (re)insurers. Source: NAIC statutory filings provided by S&P Capital IQ Pro.

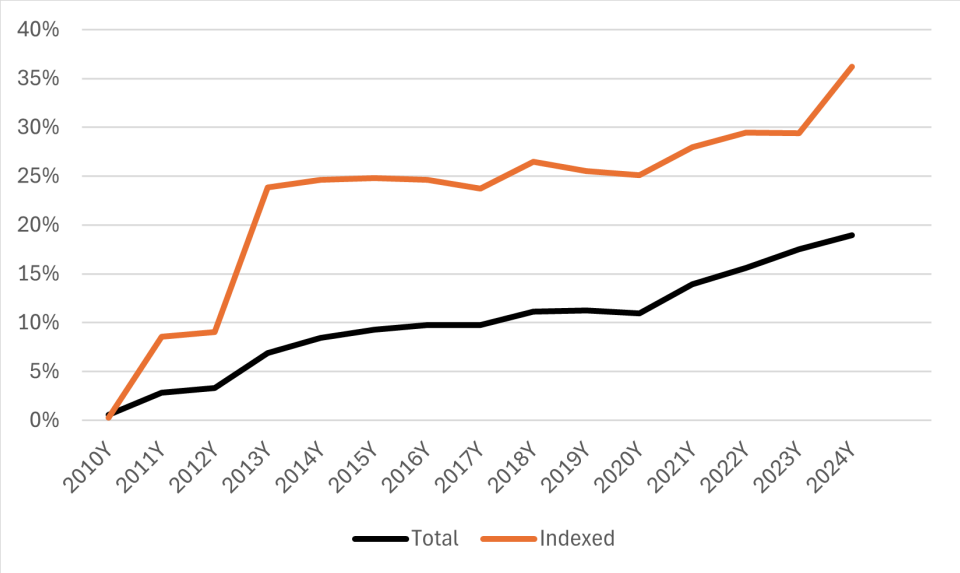
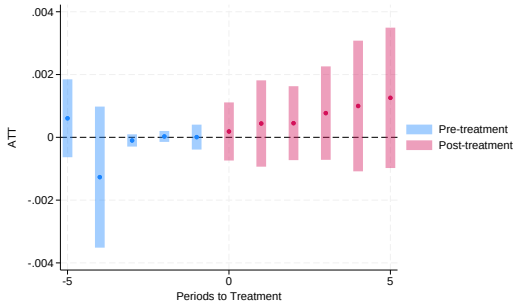


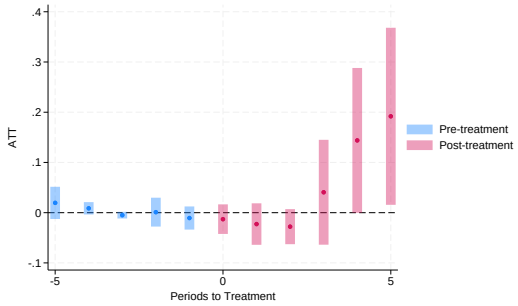
Figure 13: Dynamic Estimation - Annuity Market Share

This figure shows the results from estimating equation 5 with the treatment being the take-over by PE. We show the results for premium share and index annuity reserve shares for all take-overs, 2014-16 takeovers, and 2019-21 takeovers. The results shown use the doubly robust DID estimator based on the work of Callaway and Sant'Anna (2021) and Sant'Anna and Zhao (2020).

All Takeovers

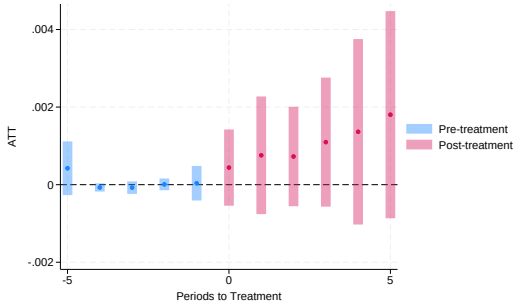


a) Premium Share

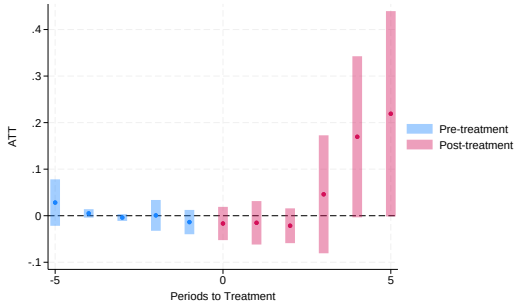


b) Indexed Annuity Reserves

2014-16 Takeovers

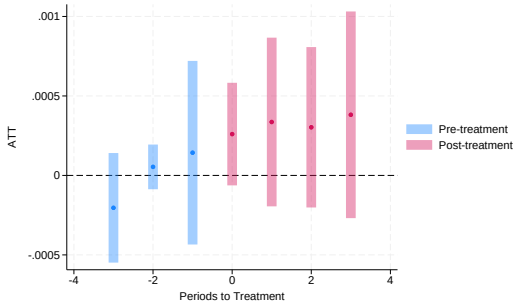


c) Premium Share

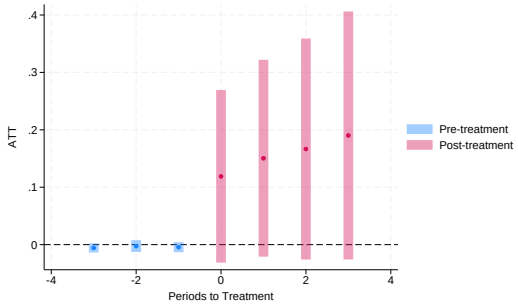


d) Indexed Annuity Reserves

2019-21 Takeovers



e) Premium Share



f) Indexed Annuity Reserves

Table 1
PP Premium Reg Summary Stats - 2024 Year-End Holdings

	count	mean	sd	p10	p25	p50	p75	p90
Yield at Purchase %	14414	5.55	0.90	4.62	5.00	5.43	5.93	6.58
Spread at Purchase %	14414	1.32	0.90	0.38	0.73	1.18	1.68	2.37
Original Maturity in years	14414	14.23	9.16	4.00	6.00	11.00	23.00	29.00
Rating Notch	14414	6.78	2.67	1.00	6.00	7.00	9.00	10.00
Actual Cost $Ms	14414	17.58	63.04	0.30	1.33	4.97	15.50	43.17
Public Bond Dummy	14414	0.71	0.45	0.00	0.00	1.00	1.00	1.00
Public ABS Dummy	14414	0.22	0.42	0.00	0.00	0.00	0.00	1.00
Private Bond Dummy	14414	0.06	0.24	0.00	0.00	0.00	0.00	0.00
Private ABS Dummy	14414	0.01	0.09	0.00	0.00	0.00	0.00	0.00
CLO Dummy	14414	0.04	0.19	0.00	0.00	0.00	0.00	0.00
PP Financial Bond Dummy	14414	0.01	0.10	0.00	0.00	0.00	0.00	0.00
Senior Secured	14414	0.40	0.49	0.00	0.00	0.00	1.00	1.00
Senior Unsecured	14414	0.54	0.50	0.00	0.00	1.00	1.00	1.00
Subordinated	14414	0.05	0.22	0.00	0.00	0.00	0.00	0.00

Table 2
Summary Stats 2017 to 2024: Change in Asset Share and Characteristics

	count	mean	sd	p10	p25	p50	p75	p90
Δ in Private Placement Asset Share	336	2.25	6.07	-2.0	0.0	0.0	3.9	9.2
Δ in PP Fin & ABS Asset Share	336	0.39	1.53	-0.4	0.0	0.0	0.3	1.1
Δ in CLO Asset Share	336	1.19	3.48	-0.9	0.0	0.1	2.3	5.3
Log GA Assets in 2017 ($Bs)	336	20.75	2.30	17.6	19.1	20.7	22.6	23.8
PE Insurer (2017)	336	0.10	0.31	0.0	0.0	0.0	0.0	1.0
New PE Insurer	336	0.03	0.18	0.0	0.0	0.0	0.0	0.0
% Private Placements 2017	336	0.04	0.06	0.0	0.0	0.0	0.1	0.1
Asset Manager>10% (2017)	336	0.32	0.47	0.0	0.0	0.0	1.0	1.0
Asset Manager>10% (New)	336	0.15	0.36	0.0	0.0	0.0	0.0	1.0
PE Asset Manager>10% (2017)	336	0.03	0.17	0.0	0.0	0.0	0.0	0.0
PE Asset Manager>10% (New)	336	0.05	0.21	0.0	0.0	0.0	0.0	0.0

Table 3
Summary Stats 2017 to 2023: Annuity Market Share and Asset Composition Change Regressions

	count	mean	sd	p10	p25	p50	p75	p90
Chg in Ann Prem Mkt Share: 17_23	335	-0.02	0.26	-0.1	-0.0	-0.0	0.0	0.1
Chg in % GA: PP Fin & ABS	335	0.56	1.78	-0.6	-0.0	0.0	0.8	2.1
Chg in % GA: CLO	335	0.55	1.85	-0.5	0.0	0.0	0.9	2.4
PE x Chg in % GA: PP Fin & ABS	335	0.28	1.50	0.0	0.0	0.0	0.0	0.0
PE x Chg in % GA: CLO	335	0.05	0.85	0.0	0.0	0.0	0.0	0.0
Chg in % of Reserves Assumed	335	1.88	12.22	-0.5	0.0	0.0	0.0	2.7
% of Industry Annuity Rsvs	335	0.29	0.96	0.0	0.0	0.0	0.1	0.8
Log GA Assets ($Bs)	335	20.94	2.33	17.8	19.2	20.9	22.8	24.1
PE Dummy	335	0.09	0.28	0.0	0.0	0.0	0.0	0.0

Table 4
Change in Asset Share and Insurer Characteristics

This table shows the results of estimating equation 1. PE Insurer 2017 is an indicator that is equal to 1 if insurers is PE-owned in 2017, New PE Insurer is an indicator that is equal to 1 if insurer is acquired by PE firm between 2018 and 2023. % Private Placements 2017 is the private placement share of general account assets in 2017. Asset Manager>10% (2017) is a dummy if the insurer had 10% or more of their assets under management of an unaffiliated asset manager. Asset Manager>10% (New) is equal to 1 if the insurer did not have a relationship in 2017, but does in 2023. PE Asset Manager>10% (2017) is equal to 1 if the insurer has more than 10% of their assets under control of an unaffiliated PE asset manager and 0 if not. PE Asset Manager>10% (New) is equal to 1 if the insurer did not have a relationship with a PE asset manager in 2017, but does in 2023. Controls: Log GA assets and Share of Annuity Market. Change in Asset Share winsorized 1/99, excludes insurers with < $10 million in GA assets in 2017 or 2024, Robust standard errors.

	PP All				PP Fin & ABS				CLO			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
PE Insurer (2017)	7.666***			6.699***	1.942***			1.797***	0.086			0.244
	(1.550)			(1.482)	(0.477)			(0.493)	(0.888)			(0.983)
New PE Insurer	5.828*			6.000*	2.908**			2.802**	3.577**			3.275*
	(2.443)			(2.541)	(1.051)			(1.079)	(1.339)			(1.372)
% Private Placements 2017		-45.304***		-41.458***		-6.168***		-5.320***		5.991		5.540
		(5.741)		(5.514)		(1.531)		(1.325)		(3.228)		(3.130)
Asset Manager>10% (2017)			1.033	0.685			0.048	-0.035			0.040	0.048
			(0.794)	(0.642)			(0.118)	(0.120)			(0.431)	(0.421)
Asset Manager>10% (New)			2.289	0.835			0.638*	0.148			0.485	0.128
			(1.217)	(1.117)			(0.277)	(0.266)			(0.741)	(0.704)
PE Asset Manager>10% (2017)			4.338	0.185			1.194	0.252			-0.612	-0.526
			(2.294)	(2.286)			(0.635)	(0.610)			(1.131)	(1.314)
PE Asset Manager>10% (New)			-1.113	-0.763			0.558	0.580			1.567	1.448
			(1.495)	(1.385)			(0.721)	(0.635)			(0.861)	(0.911)
Observations	336	336	336	336	336	336	336	336	336	336	336	336
Adjusted R-Squared	0.189	0.176	0.048	0.312	0.293	0.092	0.089	0.326	0.030	0.008	0.006	0.031

Table 5
Change in Premium Share

This figure shows the results of estimating equation 4. The sample period is 2017 to 2024. Controls are lagged Log GA Assets, share of industry annuity reserves, percent of reserves ceded to affiliates in 2024, and change in reserves assumed. The sample excludes insurers who did not write annuity premiums in estimation period and insurers with < $10 million GA assets in starting period. Robust standard errors.

	(1)	(2)	(3)	(4)	(5)	(6)
Δ Fin and ABS PP	0.037**	0.010	0.026			
	(0.012)	(0.013)	(0.027)			
Δ Fin and ABS PP x PE 2017		0.037*	0.021			
		(0.019)	(0.030)			
Δ Fin and ABS PP x New PE			-0.017			
			(0.031)			
Δ CLO				0.002	0.003	0.002
				(0.003)	(0.003)	(0.004)
Δ CLO x PE 2017					-0.005	-0.004
					(0.010)	(0.010)
Δ CLO x New PE						0.010
						(0.011)
PE 2017		0.123*	0.121*		0.216***	0.212***
		(0.051)	(0.052)		(0.063)	(0.064)
New PE Insurer			-0.035			-0.074
			(0.052)			(0.071)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	329	329	329	329	329	329
Adjusted R-Squared	0.092	0.129	0.125	0.040	0.089	0.085

Table 6
Change in Annuity Reserve Share

This figure shows the results of estimating equation 4. The sample period is 2017 to 2024. Controls are lagged Log GA Assets, share of industry annuity reserves, percent of reserves ceded to affiliates in 2024, and change in reserves assumed. The sample excludes insurers who did not write annuity premiums in estimation period and insurers with < $10 million GA assets in starting period. Robust standard errors.

	(1)	(2)	(3)	(4)	(5)	(6)
Δ Fin and ABS PP	0.013	-0.032	-0.040			
	(0.016)	(0.018)	(0.028)			
Δ Fin and ABS PP x PE 2017		0.073**	0.081*			
		(0.025)	(0.033)			
Δ Fin and ABS PP x New PE			0.012			
			(0.036)			
Δ CLO				0.001	0.002	0.004
				(0.003)	(0.003)	(0.003)
Δ CLO x PE 2017					-0.012	-0.014
					(0.012)	(0.012)
Δ CLO x New PE						-0.009
						(0.012)
PE 2017		0.101*	0.101*		0.205**	0.203**
		(0.041)	(0.041)		(0.065)	(0.065)
New PE Insurer			-0.013			-0.052
			(0.054)			(0.080)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	329	329	329	329	329	329
Adjusted R-Squared	0.017	0.117	0.112	0.008	0.059	0.061

A Data Matching

Table A1
PP Matching Source Summary

Data Source	# Issuers All Years	# Issuers 2024	Value $T All Years	Value $B 2024
BECRS	8,467	3,363	5.71	463.96
FISD	1,194	233	1.28	99.58
NETS	4,066	997	0.99	89.16
No Match	5,632	2,677	1.35	183.18
SEC	26	17	0.08	13.41
Total	19385	7287	9.40	849.31

Table A2
Dynamic Estimation: 2014 to 2019 PE Acquisitions Summary Stats

	count	mean	sd	p10	p25	p50	p75	p90
Indexed Annuity % Total Annuity Reserves	255	0.21	0.31	0.0	0.0	0.0	0.4	0.8
Share of Industry Annuity Premiums	255	0.00	0.00	0.0	0.0	0.0	0.0	0.0
PP Fin & ABS % of GA Assets	255	0.03	0.05	0.0	0.0	0.0	0.0	0.1
CLO % of GA Assets	255	0.07	0.08	0.0	0.0	0.0	0.1	0.2
Private Placements % of GA Assets	255	0.10	0.10	0.0	0.0	0.1	0.2	0.2
Log GA Assets t-1	255	21.02	1.83	18.9	19.9	21.1	22.2	23.3
Alternative Investments % of GA Assets t-1	255	0.03	0.05	0.0	0.0	0.0	0.0	0.1
Bonds % of GA Assets t-1	255	0.74	0.18	0.5	0.7	0.8	0.9	0.9
Adjusted Capital / GA Assets t-1	255	13.79	8.09	4.3	8.6	12.8	16.8	23.1
Share of Industry Annuity Reserves t-1	255	0.00	0.00	0.0	0.0	0.0	0.0	0.0

Table A3
Dynamic Estimation: 2014 to 2016 PE Acquisitions Summary Stats

	count	mean	sd	p10	p25	p50	p75	p90
Indexed Annuity % Total Annuity Reserves	179	0.15	0.27	0.0	0.0	0.0	0.2	0.6
Share of Industry Annuity Premiums	179	0.00	0.00	0.0	0.0	0.0	0.0	0.0
PP Fin & ABS % of GA Assets	179	0.03	0.05	0.0	0.0	0.0	0.0	0.1
CLO % of GA Assets	179	0.05	0.07	0.0	0.0	0.0	0.1	0.2
Private Placements % of GA Assets	179	0.08	0.10	0.0	0.0	0.0	0.1	0.2
Log GA Assets t-1	176	20.56	1.83	18.4	19.3	20.7	21.7	23.1
Alternative Investments % of GA Assets t-1	176	0.02	0.06	0.0	0.0	0.0	0.0	0.1
Bonds % of GA Assets t-1	176	0.73	0.21	0.5	0.7	0.8	0.9	0.9
Adjusted Capital / GA Assets t-1	176	13.47	8.54	3.8	7.5	12.6	17.0	22.8
Share of Industry Annuity Reserves t-1	173	0.00	0.00	0.0	0.0	0.0	0.0	0.0

Table A4
Dynamic Estimation: 2017 to 2019 PE Acquisitions Summary Stats

	count	mean	sd	p10	p25	p50	p75	p90
Indexed Annuity % Total Annuity Reserves	36	0.30	0.35	0.0	0.0	0.0	0.7	0.8
Share of Industry Annuity Premiums	36	0.00	0.00	0.0	0.0	0.0	0.0	0.0
PP Fin & ABS % of GA Assets	36	0.03	0.04	0.0	0.0	0.0	0.1	0.1
CLO % of GA Assets	36	0.08	0.07	0.0	0.0	0.1	0.1	0.2
Private Placements % of GA Assets	36	0.10	0.10	0.0	0.0	0.1	0.2	0.2
Log GA Assets t-1	36	22.08	1.42	20.7	20.8	21.3	23.9	24.1
Alternative Investments % of GA Assets t-1	36	0.03	0.02	0.0	0.0	0.0	0.0	0.1
Bonds % of GA Assets t-1	36	0.81	0.11	0.7	0.7	0.8	0.9	0.9
Adjusted Capital / GA Assets t-1	36	11.59	3.73	6.0	9.4	10.7	14.2	16.8
Share of Industry Annuity Reserves t-1	35	0.00	0.00	0.0	0.0	0.0	0.0	0.0

Table A5
Dynamic Estimation: 2019 to 2021 PE Acquisitions Summary Stats

	count	mean	sd	p10	p25	p50	p75	p90
Indexed Annuity % Total Annuity Reserves	77	0.08	0.21	0.0	0.0	0.0	0.0	0.4
Share of Industry Annuity Premiums	77	0.00	0.00	0.0	0.0	0.0	0.0	0.0
PP Fin & ABS % of GA Assets	77	0.02	0.04	0.0	0.0	0.0	0.0	0.0
CLO % of GA Assets	77	0.03	0.02	0.0	0.0	0.0	0.0	0.1
Private Placements % of GA Assets	77	0.07	0.07	0.0	0.0	0.1	0.1	0.2
Log GA Assets t-1	77	21.54	2.26	17.8	19.4	22.6	23.7	24.0
Alternative Investments % of GA Assets t-1	77	0.04	0.04	0.0	0.0	0.0	0.1	0.1
Bonds % of GA Assets t-1	77	0.68	0.17	0.4	0.6	0.7	0.8	0.9
Adjusted Capital / GA Assets t-1	77	7.20	5.47	1.0	1.7	6.3	11.9	14.2
Share of Industry Annuity Reserves t-1	77	0.00	0.00	0.0	0.0	0.0	0.0	0.0

Table A6
Dynamic Estimation: Control Group Summary Stats

	count	mean	sd	p10	p25	p50	p75	p90
Indexed Annuity % Total Annuity Reserves	5538	0.05	0.18	0.0	0.0	0.0	0.0	0.1
Share of Industry Annuity Premiums	5538	0.00	0.01	0.0	0.0	0.0	0.0	0.0
PP Fin & ABS % of GA Assets	5538	0.01	0.02	0.0	0.0	0.0	0.0	0.0
CLO % of GA Assets	5538	0.01	0.03	0.0	0.0	0.0	0.0	0.0
Private Placements % of GA Assets	5538	0.04	0.06	0.0	0.0	0.0	0.1	0.1
Log GA Assets t-1	5538	20.53	2.49	17.2	18.7	20.5	22.3	23.8
Alternative Investments % of GA Assets t-1	5538	0.02	0.03	0.0	0.0	0.0	0.0	0.1
Bonds % of GA Assets t-1	5538	0.71	0.20	0.5	0.6	0.8	0.9	0.9
Adjusted Capital / GA Assets t-1	5538	8.62	17.61	2.1	4.0	7.2	11.2	14.8
Share of Industry Annuity Reserves t-1	5538	0.00	0.01	0.0	0.0	0.0	0.0	0.0

Figure A1: Life Insurer Share of Matched Private Placement Issues

This figure uses a sample of private placement issues matched to SP Capital IQ Pro transaction data to graph the distribution of the par value-weighted proportion of issues held by life insurance companies from 2017-2024. Each bar is stacked to indicate the share attributable to different transaction size groups. We match 621 issues, 274 of which are matched directly using CUSIP9 codes and 347 are matched using a combination of labeled maturity date and Jaccard description similarity. Source: NAIC statutory filings provided by S&P Capital IQ Pro and transaction-level data from S&P Capital Pro IQ, filtered for "Debt Capital Markets" and "Rounds of Funding" transactions from 2017 to 2024.